Commonwealth of Massachusetts
Office of Consumer Affairs & Business Regulation
Division of Energy Resources

RENEWABLE ENERGY PORTFOLIO STANDARD ADVISORY RULING

FOR

PINE STATE POWER'S PROPOSED
BARNSTEAD POWER AND LIGHT BIOMASS GENERATION UNIT

December 30, 2004

1. Advisory Ruling Request by Pine State Power LLC

Pine State Power, LLC (hereafter, Pine State) has requested that the Massachusetts Division of Energy Resources (DOER) provide an Advisory Ruling[1] with regard to the qualification as a New Renewable Generation Unit under the Massachusetts Renewable Energy Portfolio Standard (RPS) of a project to retool and add power generation at an old biomass-fired steam boiler facility in Center Barnstead, New Hampshire.[2] Pine State has renamed the facility Barnstead Power & Light (BP&L). This document is DOER's response to that request.

2. Description of Existing Conditions and the Proposed Project

The project site is the former Timco sawmill, which had operated a grid-connected cogeneration plant, fueled by its own woody debris, to provide both heat to its sawmill operations and power to Public Service of New Hampshire (PSNH). The original pair of boilers in the plant utilized conventional stoker combustion. The immediately relevant history of the facility is as follows, quoting from the 9/17/04 letter:

> In 1994, Timco reached an agreement with PSNH whereby the value of the [power purchase] contract was "bought out" in exchange for Timco's agreement to cease generating power. [It subsequently] ceased to operate one of the boilers, and converted the other to a Wellons vertical, "close-coupled" gasification technology similar to the unit installed at Ware [C]o-gen, . . . Thereafter, the Wellons unit generated steam only (no electricity); the second, stoker boiler, never operated after 1994.

Because neither boiler at this site generated electricity since 1994, DOER regards neither the existing facility as a Vintage Generation Unit (as defined at 14.02) nor the site as a site of Vintage Generation (as defined at 14.05(1)(d)3). Thus, DOER views this as a new facility, even though, from a technical point of view, it is a project of retooling a long-dormant unit and adding or reconnecting generation equipment to both units. The issue before DOER is whether the proposed project, if completed, is likely to be granted a Statement of Qualification as a "New

[1] The RPS regulations, at 225 CMR 14.06(5), provide an opportunity for a Generation Unit owner or developer "to request an advisory ruling from the Division to determine whether a Unit would qualify as a New Renewable Generation Unit." Hereafter, all references to the RPS regulations will be to sections of 225 CMR 14.00 et seq. More information about Advisory Rulings for MA RPS is at http://www.mass.gov/doer/rps/advisory.htm.

[2] The request was made in a letter from Robert Cleaves of Pine State dated September 17, 2004 (hereafter, the 9/17/04 letter). Pine State's consultant, Alex Driessen of Calex Environmental, Inc., sent additional technical information as attachments to an email message addressed to DOER on October 29, 2004.

Renewable Generation Unit" for RPS. DOER would take that action if it finds that the unit meets the "low-emission, advanced biomass power conversion technology" and uses an Eligible Biomass Fuel, per the regulations at 14.05(1)(a)6. This Advisory Ruling addresses the proposed project's fuels, technologies, and air emissions.

3. Discussion of the Projects' Proposed Biomass Fuels

Pine State plans to fuel the unit with "woody materials extracted from C&D waste processing operations, as supplemented by wood pallets and woody residues from forestry operations."[3] DOER considers these fuels to fall within the definition of Eligible Biomass Fuel in the RPS regulations at 14.02.

DOER's position with regard to C&D woody debris was stated in its "Summary of Public Comments and Agency Responses" dated February 6, 2002, and in a letter from the Massachusetts Department of Environmental Protection (MA DEP) to DOER dated January 8, 2002.[4] As stated in that letter, C&D wood debris, which might include some "wood containing paints, stains, coatings or preservatives . . . can properly be considered as an eligible biomass fuel . . . as one type of 'organic refuse-derived fuel that is collected and managed separately from municipal solid waste.'" DOER has previously stated that C&D woody debris is eligible in Advisory Rulings for EcoPower, Boralex, and GenPower.[5]

4. Discussion of the Projects' Proposed Biomass Technology

The RPS regulations at 14.05(1)(a)6 provide that the qualification of biomass generation units is limited to "low emission, advanced biomass power conversion technologies using an Eligible Biomass Fuel." These criteria are designed to insure that the RPS provides incentives for older, dirtier technologies to be replaced by cleaner and more efficient technologies. DOER also believes that biomass technologies should improve over time in response to the incentives created by the RPS, in addition to other regulatory and market forces responsible for continued technological progress in the electricity generation sector generally.

DOER has already reviewed the Wellons vertical, close-coupled gasification technology that Pine State plans to use for BP&L. That review was undertaken for consideration of a Statement of Qualification Application for Ware Cogen, a project in Ware, Massachusetts, that also had proposed to install Wellons technology and for which DOER granted a Statement of Qualification on June 21, 2004.[6] DOER came to the conclusion, in the case of Ware Cogen, that the Wellons technology met the criteria cited above, based on the reasoning set forth below.

The technology represents clear advances over conventional stoker combustion. The technology, through the configuration of air injection, separates the refractory-lined furnace into vertically arranged gasification, ignition, and combustion zones, above which is a water-walled, secondary combustion chamber. The vertical arrangement of the zones and the heavily insulated refractory

[3] 9/17/04 letter.

[4] DOER's February 6, 2002 "Summary of Public Comments and Agency Responses" (see item 1.E on page six) and the DEP's January 8, 2002 letter, to which said item 1.E makes reference, can be accessed under the Public Comment Documents section near the top of this web page: http://www.state.ma.us/doer/rps/delproc.htm.

[5] Those Advisory Rulings can be accessed via a link at http://www.mass.gov/doer/rps/advisory.htm.

[6] See http://www.mass.gov/doer/rps/approved.htm for a list of all Units that have been granted Statements of Qualification.

walls (a) facilitate preheating of the air and internal radiation of heat to the grate, which contribute to fuel drying and devolatilization; and (b) increase particulate retention in the vessel, so that its oxidation is maximized. The configuration of air injection, consequent patterns of turbulence, and zoning result in maximized conversion of fuel to heat and minimized production of ash and particulates, as well as significant NOx emission reduction. This technology has advantages over fluidized bed technologies with regard to system efficiency, being less complicated and requiring less parasitic load (mainly from reduced need for fan horsepower), with the result that it produces more electricity per quantity of fuel heat input.[7]

Based on the prior review and its conclusion, DOER finds that the technology proposed for BP&L qualifies as "advanced power conversion technology."

5. Discussion of the Project's Air Emissions

A generation unit using an eligible biomass fuel and advanced technology must meet the criterion of "low emissions" in order to qualify a New Renewable Generation Unit for the RPS, per the regulations at 14.05(1)(a)6. This criterion does not set specific emission targets. Rather, the threshold for eligibility is expected to become more stringent as biomass energy conversion and emission control technologies improve. In addition, that threshold might differ among fuels, technologies, and project scale. Under the RPS regulations at 14.05(1)(a)6.a, a generator must receive a valid air permit from its appropriate state air quality regulatory agency to qualify as an eligible biomass generator. The same subsection also provides that the project "must . . . demonstrate to the satisfaction of the Division that its emission rates are consistent with emission rates for comparable biomass units as prescribed by the Massachusetts Department of Environmental Protection."[8]

As of the date of this Advisory Ruling, DOER defers any finding with regard to expected emissions at BP&L because the information received from Pine State is not yet complete or final, and discussions between Pine State and the MA DEP are continuing. DOER expects Pine State to continue those discussions with the DEP and to submit the results of additional engineering analysis and modeling. The DEP would review the additional information and also may discuss that information with the NH Department of Environmental Services (NH DES). Based on MA DEP conclusions as to whether its expected emission levels would be consistent with those of a comparable C&D-fueled plant sited in Massachusetts, DOER would decide whether the RPS "low emissions" criterion has been met.

DOER advises Pine State to maintain communication with both the MA DEP and the NH DES, as well as to monitor Advisory Rulings and Statements of Qualification at DOER's RPS web page.[9] Also, Pine State should note that DOER includes emissions limits and emission monitoring and reporting requirements as conditions in the Statement of Qualification for any non-Massachusetts biomass unit, including the proposed BP&L plant in New Hampshire.

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[7] The facts, assertions, and conclusions in this paragraph are based, in part, on a meeting with the owners of Ware Cogen, its consultant, and Wellons Inc. at DOER on April 13, 2004, including a slide presentation by Wellons.

[8] If the air quality regulations applicable in the jurisdiction where the unit is located do not require an air permit, then the unit must satisfy the requirements of the RPS regulations at 14.05(1)(a)6.c. This does not apply here.

[9] http://www.mass.gov/doer/rps/.

6. Summary of Ruling

DOER has found Pine State's proposed project, as currently described, to fall within the eligibility criteria for biomass-fueled New Renewable Generation Units provided in the RPS regulations at 14.05(1)(a)6 with regard to its technology and fuel; however, DOER defers any finding at this time with regard to expected air emissions. The following summarizes this finding, and it also notes several key issues and requirements for Pine State to consider in its project planning. DOER will also consider these issues and requirements when reviewing an eventual Statement of Qualification Application,.

1. DOER finds the proposed fuels to meet the definition of Eligible Biomass Fuels in the RPS regulations. The proposed fuel stream will consist of C&D woody debris from waste processing operations, supplemented by wood pallets and by woody residues from forestry operations.

2. DOER finds that the proposed Wellons, vertical, close-coupled gasification technology would qualify as an advanced biomass power conversion technology. This finding is consistent with the conclusions on which DOER based its Statement of Qualification for Ware Cogen.

3. DOER defers any finding at this time with regard to expected emissions at BP&L because the information received from Pine State is not yet complete or final, and discussions between Pine State and the MA DEP are continuing. DOER expects Pine State to continue those discussions with the DEP and to provide information from additional engineering analyses and modeling. If the DEP determines that the plant's expected emission levels would be consistent with those of a comparable C&D-fueled plant sited in Massachusetts, then DOER would find that it meets the RPS low emission criterion. DOER advises Pine State to monitor DOER Advisory Rulings and other MA RPS decisions, as well as MA DEP air permits, subsequent to this Advisory Ruling.

4. Pine State should note that, while DOER may grant a Statement of Qualification for the proposed Generation Unit, the RPS qualification of the plant always would be contingent on Pine State's obtaining any required NH air permit and on its operating the plant in compliance both with those permit and with DOER's RPS regulations, including the conditions of the plant's Statement of Qualification. Emissions monitoring and reporting requirements would be included among those conditions.

5. Finally, Pine State should note that, once DOER grants a Statement of Qualification, further advances in "low-emission, biomass power conversion technologies" would have no effect on the plant's MA RPS qualification.